



**STORK**

*A Fluor Company*

# COOPERHEAT EQUIPMENT

LEADING INNOVATORS IN THERMAL TECHNOLOGY  
FURNACES AND OVENS CATALOGUE

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# FURNACES

Low thermal mass furnaces reduce overall heat treatment costs by increasing production and improving product quality. Their special linings require less total heat input to reach operating temperatures quicker than old-style refractory lined furnaces. Therefore, the lower thermal conductivity of the linings delivers much lower heat loss from the furnace, achieving impressive energy savings. Close temperature uniformity can be achieved using Stork Cooperheat's advanced programmable temperature control systems with multi-zone controls.

The theory of high velocity heating is now accepted practice industry wide and Stork Cooperheat has been one of the pioneers of high velocity heating within fuel fired furnaces. The rapidly recirculating gases break down the layer of still air surrounding the object being heated and increases the heat transferred by convection. Shorter heat up times and improved temperature uniformity are the resulting benefits.

## FEATURES

- High burner discharge velocity requires no extra recirculation fans.
- Close temperature uniformity throughout the furnace.
- Positive furnace pressure via pressure control prevents cold air ingress and improves temperature uniformity.
- Hot spots eliminated by low flame temperatures.
- Fewer burners needed reducing the cost particularly in expensive burner safety systems.

## FINANCIAL BENEFITS

- Reduced energy costs using low thermal mass materials in furnace construction, ensuring energy is used to heat the load, not furnace brickwork.
- Recuperative high velocity gas burners reduce power costs.



**Stork Cooperheat designs and manufactures industry leading furnaces and ovens to a range of sectors including oil and gas, power, chemical, heavy fabrication, forging, foundry and any other industry where heating processes are required.**

**With extensive global experience and expertise, Stork Cooperheat offers unparalleled product excellence.**

Stork Cooperheat has the skill and expertise to supply a range of innovative and versatile furnaces and ovens specifically designed with the needs of the operator and industry in mind. This ensures we deliver tailored solutions to meet individual client requirements and specifications.

As a market leader in the field of heat treatment, our range of products and services are recognized around the world for their quality, durability, reliability and the highest standards of safety.

Our sales engineers' extensive experience in the field of heat treatment ensures they are fully qualified to provide consultations prior to placing orders, ensuring specific requirements are understood and met, whilst providing comprehensive before and after sale support.



# OVENS

## OPERATIONAL BENEFITS

- Uniform distribution of heat controls the heating cycle and heating zones providing by a fully automatic temperature programme.
- Design and operational flexibility associated with low thermal mass furnaces.
- Modular construction enables the furnace to be extended in length to cope with larger work pieces or alternatively a temporary extension for one off applications can be added. The larger furnaces use preformed panels as standard.
- In many instances it can be more economical to extend existing furnaces rather than replacing them.
- Wide range of fuel sources which can be more economical. It is Stork Cooperheat's philosophy to design a system around the fuel choice of the client, or if necessary to convert existing units.

## APPLICATIONS

- Stress Relieving (PWH/T)
- Annealing
- Hardening
- Tempering
- Aging
- Quenching
- Normalising
- Solution Annealing
- Pre-heating
- Refractory Dryout



The high thermal efficiency and lightweight construction of Stork Cooperheat ovens is achieved by the use of low thermal mass insulation. Our ovens make the most efficient use of the available energy, giving fuel savings due to the use of proven materials. A variety of energy sources can be used, for example electricity, light fuel oil, gas or steam.

## FEATURES

- Wide range of custom built ovens with various configurations of loading access and load support furniture.
- Forced air circulation achieves efficient and uniform heating. This means fan (or fans) force air through the heating unit and circulates in a convection pattern within the load area, eliminating any stagnant air pockets.
- Both non-exhausting and exhausting ventilation systems are available.
- Electrical industrial ovens feature high performance mineral insulated seamless sheathed heating elements, rated to give a prolonged working life.
- Fuel fired with indirect gas or oil fired heater units and products of combustion do not enter the work chamber. With direct units, the products mix with the air in a remote chamber and not in the work chamber. All systems have full flame failure safety.
- Close control of temperature with automatic controls providing close uniformity at equilibrium conditions. Adjustable programming for heat up and timed soak periods, temperature recording, over temperature limit and alarm, as well as solid-state load switching are all available options.

## FINANCIAL BENEFITS

- Using low thermal mass materials in oven construction, ensures that the energy is used to heat the load, not the oven, providing lower energy costs.

## APPLICATIONS

- Drying
- Curing
- Drum Warming
- Pre-heating
- Tempering
- General Purpose
- Welding Rod Quivers and Ovens



# OTHER SERVICES

## PORTABLE GAS & OIL BURNERS

Stork Cooperheat offers a range of portable, high velocity gas and oil burner equipment that can be used for a variety of refractory dryout and heat treatment processes, either as stand-alone units or in conjunction with a modular design portable furnace.

Gas burners come in standard sizes of 1.0 and 6.0 Million Btu per hour, suitable for either natural gas or LPG whilst the standard oil burner is rated at 6.0 Million Btu per hour and is suitable for light fuel oil. The combustion control equipment and combustion air fans are trolley mounted for ease of portability and come complete with connecting hoses. Both manual and automatic control options are available together with a range of complementary accessories. A range of gas fired, Surface Combustion Units (SCUs) are also available which are primarily used for Infra-Red heating for preheating applications, especially useful for rotating work pieces.

## LADLE PREHEATERS/DRYERS

Stork Cooperheat's ladle and tundish heating stations consist of a refractory lined cover with a burner mounted on it. This can be positioned on the ladle or tundish by winches, pneumatic cylinders, cranes, etc. and retracted when the ladle or tundish is ready for use.

The structural steelwork required to support this unit and provide access is also supplied. A self-contained control and safety package incorporating mechanical and electrical items is included with the burner. This packaged system takes care of pressure safety, flame safety, temperature programming and control, fuel / air ratios, excess air facility and all the manual combustion system functions. Special features can be included as these units are usually tailor made to suit individual requirements. The primary application for these units is within the iron and steel industry.

## REFURBISHMENT & UPGRADES

Stork Cooperheat offers a refurbishment service for existing furnaces to allow structure re-use minimising capital spend for clients. Inefficient linings, combustion or heating systems and obsolete control equipment can be replaced by modern systems which provide improved performance and prolong the lifespan of the furnace. This service also extends to modernizing ovens and can include changing the fuel source of the existing equipment. Stork Cooperheat can provide a complete refurbishment service for any branded heat treatment furnace or oven and incorporate the very latest developments technology in thermal to enhance efficiency and, where required, increase capacity.

## CALIBRATION SURVEYS

Stork Cooperheat provides a range of calibration, survey and maintenance services to end users, including:

- Temperature uniformity surveys
- Instrument calibration
- Furnace inspection
- Furnace maintenance (one off or annual service contracts)
- Advice on achieving NADCAP compliance



## SPARES, REPAIRS & CONSUMABLES

Stork Cooperheat provides a complete heat treatment service, supplying consumables and spare parts for heat treatment equipment from an extensive stock held at our UK headquarters, various manufacturing sites and overseas operational bases.

## SALTBATH PUMP OUT

Stork Cooperheat delivers a highly specialized process to remove molten salt from a saltbath at temperature whenever a saltbath needs to be drained for inspection or repair. This can either be environmentally disposed of or placed in a heated holding tank for temporary storage.

## CONSULTANCY

Stork Cooperheat's experienced teams provide a consultancy service either directly or as part of a larger integrated project package. This includes general advice and expertise on a variety of industry challenges including:

- Reducing energy consumption
- Best practice operational procedures
- Optimizing efficiency

## TRAINING

The range of customer training available from Stork Cooperheat includes:

- **In-house courses:** A series of regular operator training courses at the Southampton Office are designed to educate both new and existing users in the latest technology relating to furnaces and ovens. Delegates from both the UK and overseas attend, covering the use and application of furnaces and ovens, together with detailed appraisals of controls and instrumentation
- **On-site courses:** Alternatively, on-site training is also available. Stork Cooperheat is committed to running regular on site training courses covering operating procedures, installation and commissioning as well as routine refresher training courses.



# RECENT PROJECTS



## Major global titanium product manufacturer, UK

Automated Electric twin hearth top hat type Creep Flattening furnaces for the aerospace industry. The furnace is 7m x 3m x 5m rated at 640KW fully equipped with a SCADA System including a Visual Supervisor HMI and fault finding sensors. The twin hearth configuration enables 24 hour production and allows the process to achieve optimum efficiency.

## Global power generation, transmission and rail infrastructure provider, Saudi Arabia

A 700KW Electric Bogie hearth furnace used to anneal stainless steel gas turbine components. The furnace is 6.5m x 6.5m x 8m in size and has assisted cooling in the form of roof vents to improve the cycle time efficiency. This is the show piece feature in the recently commissioned Rabigh Thermal Services Workshop.



## Global provider in advanced technology equipment and services for drilling and production, LNG, pipelines, refining and petrochemicals, Norway

The 250KW Electric Bogie hearth furnace used to stress relieve components for the oil and gas industry. The furnace is 6m x 4m x 5m and is equipped with assisted cooling in the form of roof vents.



## Leading oilfield engineering equipment design and manufacturing company, Doha

286KW Electric Guillotine Door Bogie Hearth Furnace used to perform PWHT on wellhead equipment. The furnace is 4m x 4m x 8m with controlled cooling and is built to achieve high uniformity tolerances.

## Leading design and construction engineering provider to pharmaceutical, chemical and nuclear industries, UK

66kW Gem Stone cleaning skid comprising of preheat furnace stations and salt cleaning stations. The corrosive cleaning salt has resulted in robust design of the salt pot. This will be incorporated into a comprehensive laboratory spec cleaning procedure resulting in commercially usable gem stones. The system will be fully automated and designed to involve little or no human interaction in order to protect against the corrosive nature of the salt.

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# CASE STUDY

## SOUTHPORT COLLEGE TRAINING FURNACE

As part of Stork's heat treatment apprenticeship programme in partnership with Southport College, two third year apprentices completed a project to design, manufacture and install a professional furnace at Southport College to improve their learning facilities.

Combining knowledge and skills gained from college and work experience at Stork, the scope of work was to build a new workshop furnace for use at Southport College for training purposes. The two small workshop furnaces that were in the college were no longer suitable for use and the college were thrilled with the offer from Stork to develop and install a furnace to enhance their Engineering department.

Using leftover materials from previous furnace projects and with support from local suppliers for additional parts, the apprentices worked together to determine the furnace requirements; agree electrical and mechanical design, consider health and safety features, undertake the equipment build and plan the furnace installation.



With technical advice and support from Stork engineers, the project was completed successfully and the furnace was installed early 2014.



Stork apprentices and management with Southport College representatives



 SOUTHPORT COLLEGE IS EXTREMELY GRATEFUL TO STORK. THE BESPOKE FURNACE WILL BE AN INTEGRAL PART OF THE ENGINEERING DEPARTMENT AT THE COLLEGE AND MANY APPRENTICES WILL BENEFIT FROM THE HANDS ON TRAINING FACILITY NOW AVAILABLE. STORK IS THE PERFECT EXAMPLE OF A COMPANY WHICH HAS TRULY EMBRACED THE APPRENTICESHIP SCHEME AND I WOULD URGE ANY BUSINESSES CONSIDERING RECRUITING APPRENTICES TO FOLLOW THEIR LEAD.

**Mr John Clark**  
 Principle  
 SOUTHPORT COLLEGE



# SAFETY IS A CORE VALUE

Safety is not a priority at Stork, it's our first core value. Whatever priorities we have each day, taking care of each other's safety, health and protecting the environment is central to how we do things.

REACH Beyond Zero is our global HSE platform to help us turn our core value into a day-to-day reality. It is our aspirational vision for HSE. Zero because we believe that incidents are not inevitable, they are preventable. By working together, we can create a future at Stork that is free of incidents. REACH Beyond because we are always pushing ourselves to go further, to continuously improve our HSE performance. Through REACH Beyond Zero, we all benefit. There are six building blocks that help us REACH Beyond Zero.

#### People create safety

Recognizing that it is our behaviors and attitudes that make the difference. At Stork, we have well developed behavioral safety programs, leadership training, recognition and awards to ensure we are all skilled and motivated to be safe.

#### Global standards, local ownership

Setting out our expectations for HSE across the Stork business, with global consistency where it makes sense, whilst making the most of the expertise and diversity of our local teams. Global standards include our minimum safety expectations for all tasks that are described in our 10 Life-saving rules.

#### HSE intelligence

Using the experience and knowledge of 18,000 employees worldwide to help direct our HSE activities. This includes looking out for new risks in the work

environment. Reporting hazards, near misses and events and analyzing these events for trends. We use leading indicators to measure the effectiveness of our risk prevention measures.

#### Adding client HSE value

As a global leader in operations & maintenance we bring a wealth of expertise in HSE to our clients. At every client location, it is our aim to exceed our clients HSE expectations and be an active partner in improving our clients HSE performance.

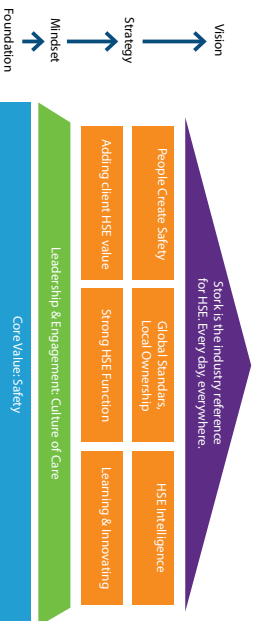
#### Strong HSE function

Stork has a global network of HSE professionals who support our operations teams in delivering safe operations. This global function ensures that we always have the capability to succeed in HSE.

#### Learning and innovating

Central to our REACH Beyond Zero vision are the opportunities to apply learning from our own incidents and those that occur within wider industries. At Stork, we are continuously scanning the market for innovations that may help us reduce our HSE risks. At Stork, we aim to be the industry reference for HSE. Every day, everywhere.

For more information visit our website: [www.stork.com/reachbeyondzero](http://www.stork.com/reachbeyondzero)



**REACH**  
BEYOND ZERO

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